

**AMENDMENTS TO THE CLAIMS:**

This Listing of Claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. *(Currently Amended)* Method for analysis of ~~objects~~ an object in microlithography, ~~preferably of masks, by means of~~ comprising the steps of:  
providing an aerial image measurement system (AIMS) that consists of at least two imaging steps, whereby:  
detecting the image output of the AIMS;  
employing a correction filter to correct the detected image ~~is corrected~~ with respect to the transfer behavior of the second or other imaging steps ~~by means of a correction filter.~~
2. *(Currently Amended)* ~~Method~~ The method according to claim 1, ~~whereby the illumination of~~ further comprising the step of illuminating the object ~~occurs with incident and/or transmitted light.~~
3. *(Currently Amended)* ~~Method~~ The method according to ~~one of the preceding claims,~~ whereby the correction is carried out in such a way that the corrected output variables of the image correspond to a photolithography stepper or scanner claim 1, further comprising the step of illuminating the object with transmitted light.
4. *(Currently Amended)* ~~Method~~ The method according to ~~one of the preceding claims,~~ whereby the correction is carried out by an involution claim 1, wherein the image output contains output variables and the correction by the correction filter is carried out in such a way that the corrected output variables of the image correspond to a photolithography stepper or scanner.
5. *(Currently Amended)* ~~Method~~ The method according to ~~one of the preceding claims~~ claim 1, whereby measured correction values are used for the correction is carried out by an involution.

6. *(Currently Amended)* ~~Method~~ The method according to ~~one of the preceding claims~~ claim 1, whereby ~~calculated~~ measured correction values are used for the correction.

7. *(Currently Amended)* ~~Method~~ The method according to ~~one of the preceding claims~~ claim 1, whereby ~~the calculated~~ correction is carried out using an electronic circuit by means of an analog or digital filter or an algorithmic values are used for the correction by means of software in a digital computer.

8. *(Currently Amended)* The method according to claim 1, whereby the correction is carried out using an electronic circuit by means of an analog or digital filter or an algorithmic correction by means of software in a digital computer. ~~AIMS system for carrying out the method according to one of the preceding claims, with at least the following components:~~

a) a first imaging step consisting of:

~~—EUV imaging optics with mirrors, especially Schwarzschild lens, especially spherical or aspherical~~

and/or

~~EUV imaging optics with zone plates~~

and/or

~~X-ray imaging optics with mirrors, especially Schwarzschild lens, especially spherical or aspherical~~

and/or

~~X-ray imaging optics with zone plates~~

and/or

~~UV imaging optics with diffractive optics (lenses, beam splitters, prisms, grids, etc.)~~

And

b) at least one second imaging step consisting of

~~UV imaging optics with diffractive optics (lenses, beam splitters, prisms, grids, etc.)~~

and/or

~~VIS imaging optics with diffractive optics (lenses, beam splitters, prisms, grids, etc.)~~

Serial No.: 10/564,282  
Atty. Docket No.: P70977US0

~~and/or~~

~~electron microscope (PEEM-photoelectron microscope)~~

~~and/or~~

~~image converter consisting of~~

~~EUV/VIS scintillator~~

~~and/or~~

~~EUV/UV scintillator~~

~~and/or~~

~~X-ray/VIS scintillator~~

~~and/or~~

~~X-ray/UV scintillator~~

~~and/or~~

~~UV/VIS scintillator~~

~~and/or~~

~~photocathode: conversion of photons (X-ray, EUV, UV) into electrons~~

~~and/or~~

~~fiber optics~~

~~and/or~~

~~camera~~

~~and/or~~

~~microlens array on camera or scintillator~~

~~and/or~~

~~amplifier elements (multi-channel plate)~~

9. (New) The method according to claim 1, wherein the object is a mask for manufacturing semiconductors.

10. (New) An apparatus for analysis of an object in microlithography, the apparatus comprising:

an aerial image measurement system (AIMS) that consists of at least first and second imaging devices;  
means for detecting the image output of the AIMS; and  
a correction filter for correcting the detected image with respect to the transfer behavior of all of the imaging devices other than the first imaging device.

11. *(New)* The apparatus of claim 9, wherein the first imaging device is selected from the group consisting of EUV imaging optics with mirrors; EUV imaging optics with zone plates; X-ray imaging optics with mirrors; X-ray imaging optics with zone plates and UV imaging optics with diffractive optics.

12. *(New)* The apparatus of claim 9, wherein the imaging devices other than the first imaging device are selected from the group consisting of UV imaging optics with diffractive optics; VIS imaging optics with diffractive optics; electron microscope; image converter; converter of photons into electrons; fiber optics; camera; micro-lens array on camera or scintillator; and amplifier elements.